

MINISTRY OF FISHERIES ALBION FISHERIES RESEARCH CENTRE MAURITIUS



Our vision

- *To be an economic pillar with due regard to sustainability of aquatic resources and social development for the benefit of all stakeholders.*

Our mission

- *To provide an enabling environment for the promotion of sustainable development of the fisheries sector and to ensure continued economic growth, social development within the framework of good governance.*

Our Objectives

- *To undertake fisheries and aquaculture research and development and manage resources for sustainable development;*
- *to consolidate existing knowledge and promote new ideas in fisheries development and management;*
- *to promote the development of the sea food hub in cooperation with all stakeholders;*
- *to promote and regulate the optimal long-term sustainable utilization of living marine resources;*
- *to foster the interest of Mauritius within the international fisheries community, including encouraging the international trade of fish commodities within the framework of international laws and conventions*
- *to disseminate information on fisheries; and*
- *to have a national fisheries policy responsive to the aspirations of our stakeholders*

ALBION FISHERIES RESEARCH CENTRE

The AFRC carries out the research, development and management functions of the MFR. It has been almost entirely constructed and equipped with Japanese assistance in three phases between 1981 to 1995.

The Albion Fisheries Research Centre cover an area of 3,410m² and houses offices/administration block, biological, chemical, microbiology and marine ecological laboratories and hatcheries.



ECONOMIC OUTLOOK OF THE FISHERIES SECTOR - 2013

• Turnover	Rs 25.60 billion
• Import (170,000 tonnes)	Rs. 11.866 billion
• Exports (108,547 tonnes)	Rs 14.607 billion
• Trade Balance	Rs. 2.741 billion
• Contribution to GDP around	1.5 %
• Contribution to national exports	20.3 %
• Revenue from calling fishing vessels	Rs. 9.93 billion
• Revenue from licences	Rs. 64.425 million
• Revenue from seafood export(processing)	Rs 11.48 billion
• Re-export of fish & fish preparations	Rs. 3.127 billion
• No. of calling foreign fishing vessels	993
• licenses issued to foreign fishing vessels	304
• Transshipment	40,043 tonnes
• Employment in seafood processing	6 000
• Indirect employment in the seafood sector (ancillary services)	10 000
• Direct employment linked to fishing activities in Mauritius EEZ (including Rodrigues)	6 000
• Tuna constitutes about 96% of the total export value of fish and fish products from Mauritius	

To achieve its mission the Albion Fisheries Research Centre has under its umbrella the following divisions:

- ***Aquaculture***
- ***Laboratory***
- ***Marine Conservation***
- ***Marine Science***
- ***Fisheries Management & Research***
- ***Monitoring, Control and Surveillance (Vessel Monitoring System)***
- ***Documentation Unit***

AQUACULTURE DIVISION

The Division is involved in the following activities:

- *Conducts Marine Ranching project;*
- *Implements floating cage project;*
- *provides fish farmers with camaron juveniles and berri rouge fingerlings and fresh water ornamental fish (Gold fish ,Molly& platy) against payment;*
- *provides persons interested disseminates information on aquaculture, tender technical advice on aquaculture projects;*
- *monitors aquaculture projects (freshwater and marine);*
- *appraises aquaculture projects;*
- *attends to fish mortalities; and*
- *assists students in research projects.*



FRESH WATER AQUACULTURE

- Giant freshwater prawn (*Macrobrachium rosenbergii*): Seed production from berried females procured from private farmers. Camaron juveniles produced from October to April.



Macrobrachium rosenbergii

- Berri rouge (*Oreochromis sp.*): Seed production of berri rouge for sale to private farmers .



Berri Rouge

- Freshwater ornamental fish (Gold fish, Platy and Molly): Breeding and culture of freshwater ornamental fish; Fingerlings sold to interested persons.



Carassius auratus

Xiphophorus maculatus

Poecilia latipinna

MARINE AQUACULTURE

- *As regard marine aquaculture, the Centre has recently embarked on a marine ranching programme whereby fingerlings of rabbit fish *Siganus sp.*, of sea bream and crablets of mud crab are produced and released at selected sites in the lagoon.*
- *A pilot cage culture project at sea for Fishermen Cooperatives at TrouD'Eau Douce and Grand Gaube*
- *The Fishermen Investment Trust in collaboration with the AFRC has set six similar cages for groups of fishermen in other regions*
- *.Fingerlings produced at AFRC are supplied to these cages*
- *Ten more such cages will be provided to fishermen cooperatives*

Other projects:

Marine ranching

- Seed production of sea bream for stock enhancement.
- Post-Larval capture and culture of rabbit fish(*Siganus sutor*) for marine ranching
- Culture of sea cucumber (*Holothuria scabra*) for stock enhancement.
- Seed production of mud crab (*Scylla serrata*) to service fishermen both in Rodrigues and Mauritius and for sea ranching.
- Seaweed Culture in collaboration with the Mauritius Research Council.



Holothuria scabra



Scylla serrata



seaweed

Coral Farming

- Coral farming is a tool to rehabilitate degraded coral reef for conserving the rich and fragile coral ecosystems.
- Coral fragments from the wild are fixed on the tables made of simple eco-friendly materials .
- Different species of corals are used for farming and their growth is monitored regularly.
- When ready, these farmed corals are used to rehabilitate degraded coral reef areas.
- Pilot project in the lagoon at Albion. Five basal plates fixed with coral fragments (12 species) on simple structures.
- All species of corals grew well from time of placement (October 2008)
- Acropora spp. had a faster growth rate but were less resistant to coral bleaching. Species of Galaxea , Pocillopora, Porites showed a good growth rate and were resistant to coral bleaching.
- Presently coral farming nurseries have been set up in several sites.



Different species of farmed corals on tables

AFRC LABORATORY DIVISION

The Laboratory division consists of three laboratories—Microbiology, Chemistry and Fish Toxicity. The laboratories are responsible for monitoring the quality of our coastal waters, screening of toxic fishes and harmful marine algae. The laboratories are in the process of accreditation for ISO 17025.

Activities of the division:

- monitoring of lagoonal waters (physico-chemical) to study the trends in water quality characteristics.
- monitoring water quality (microbiological) at public beaches for public health and recreational aspects.
- carry out the identification and screening of the toxic fishes.
- contribution to the setting up of national standards and guidelines for coastal waters.
- investigation in cases of marine pollution and fish mortality, and red tides.



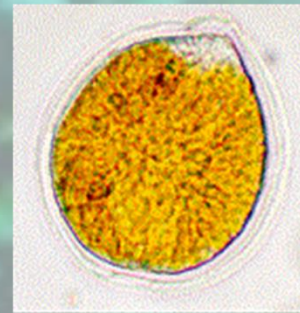
Fish Toxicity Laboratory

Consumption of certain types of reef fishes and shellfish causes fish poisoning in humans due to the presence of marine algal toxins in their tissue. One of the most common type of fish poisoning in Mauritius is Ciguatera. It is a food borne illness caused by eating certain reef fishes which have accumulated ciguatoxins in their flesh. The Fisheries and Marine Resources Act 2007—Fisheries and Marine Resources (Toxic Fish) Regulations 2004—defines, regulates fishing and the sale of twenty one species/groups of fishes and other marine organisms in Mauritius.

Gambierdiscus toxicus



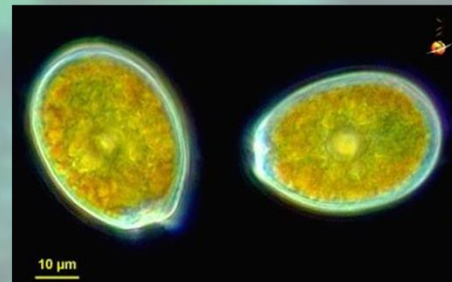
Ostreopsis sp.



Amphidinium sp



Prorocentrum Sp.



LONG TERM MONITORING OF COASTAL WATER QUALITY CHEMICAL AND MICROBIOLOGICAL PARAMETERS– CHEMISTRY & MICROBIOLOGY LABORATORIES

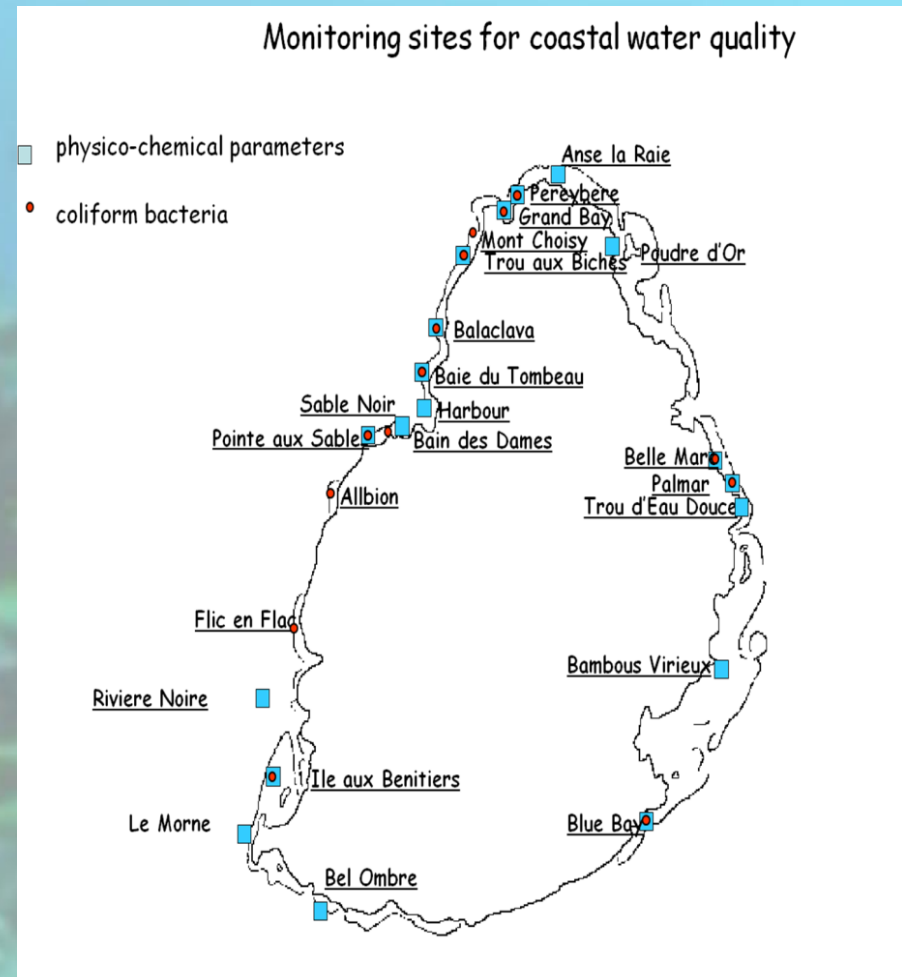
Objectives of the long term monitoring project :

- To safeguard public users from health hazards
- Observe the evolutionary trends of the water quality over time and space, assess impacts resulting from various land based activities as well as marine based activities.

ACTIVITIES

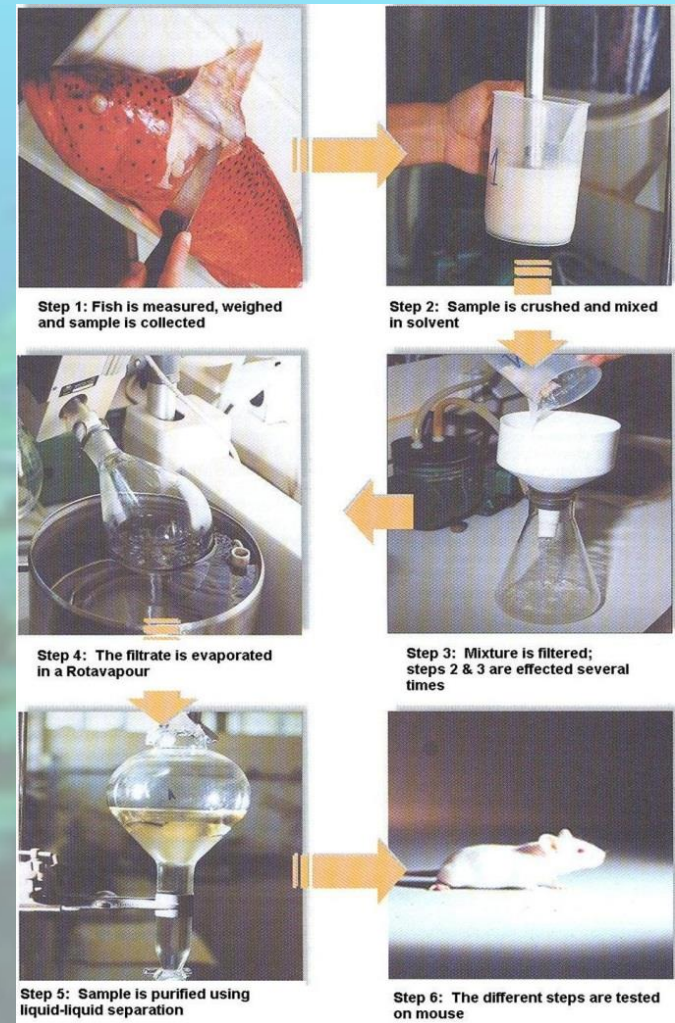
Monitoring of lagoonal waters (physico-chemical) to study the trends in water quality characteristics.

Monitoring water quality (microbiological) at public beaches for public health and recreational aspects.



Bioassay tests are carried out using test animals like mongoose and white mouse.

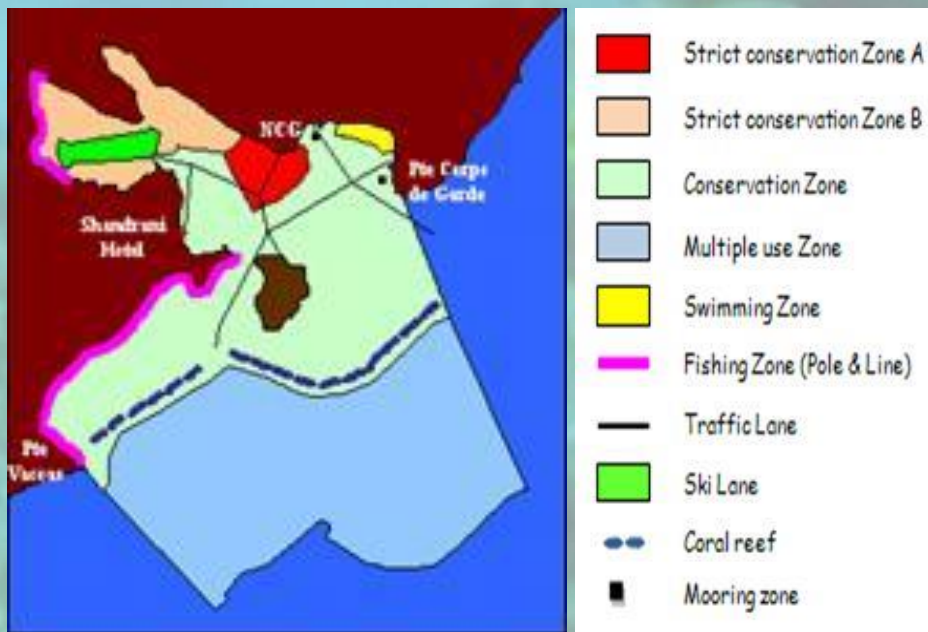
- Mongoose are fed on suspected fish specimens for a period of 3 days at the rate of 10% body weight and the animals are observed for any signs of intoxication, which vary depending on the severity of the intoxication.
- The mouse bioassay consists of injection of a final extract obtained from the potentially toxic fish to white mice. The test mice are observed for 24 hours after injection for any sign and severity of the intoxication.



MARINE CONSERVATION DIVISION

The Marine Conservation Division is responsible for the protection and conservation of marine bio-diversity in the Marine Parks and Fishing Reserves through the following activities:-

- manage the Marine Protected Areas (MPA) and contribute to a regional/global network of marine and coastal protected areas.
- Regulate permissible activities through the issue of permits for the BBMP and interference permits for the other Marine Protected Areas.



Swimming zone



Traffic Lane

MARINE CONSERVATION DIVISION(Ctd)

- assess Environmental Impact Assessment (EIA) documents and Preliminary Environmental Reports (PER) and make appropriate recommendations to the Ministry of Environment and Sustainable Development.
- participate in Post-EIA/PER monitoring for works carried out in the coastal zone.



Underwater ecological survey



Mangrove propagation

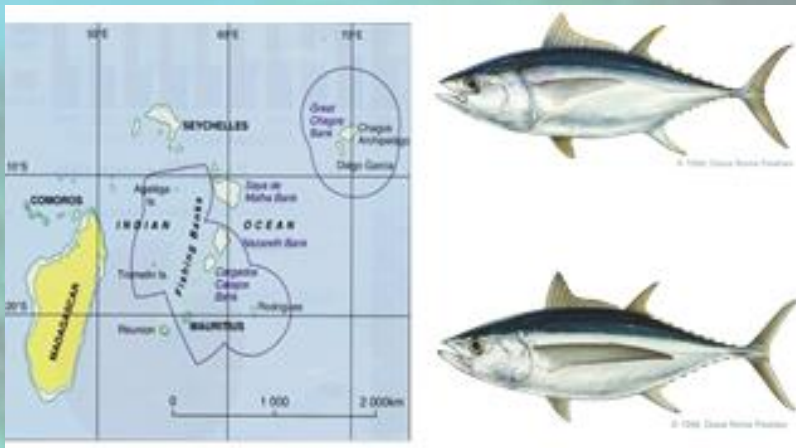
MARINE SCIENCE DIVISION

- The Marine Science Division is responsible for the **protection and conservation of marine bio-diversity and habitats for sustainable use while maximizing economic and social benefits** derived from the coastal zone through the following activities:
- *assess and make recommendations on proposals for coastal development and tourism related projects.*
- *monitor marine ecosystems—coral reefs, seagrasses and associated biota, through field and underwater surveys, in our coastal waters.*
- **re-habilitation of mangroves** in denuded areas for coastal protection.
- **underwater ecological surveys** for coastal development and tourism related projects such as undersea walk activities, demarcation of swimming zones, construction of jetties and the placing of platforms.

FISHERIES MANAGEMENT DIVISION

Tuna and other pelagic fisheries

The main gears for tuna fishery are purse seine (encircling nets) and longline (industrial). Fishing licenses are issued to purse seiners and longliners either under Fishing Agreements between Mauritius and other States or to individual fishing vessels to operate in the EEZ.



EEZ of Mauritius showing main fishing locations



Purse Seine



Longline fishery

Bigeye (*Thunnus obesus*)

Albacore tuna (*Thunnus alalunga*)

FISHERIES MANAGEMENT DIVISION (CONTD")

Local semi-industrial fishery

Besides the large scale industrial purse seine and longline fisheries, pelagic species also support small scale fishery.

Sports Fishery

The sport fishery involves local recreational fishermen and tourists. It is an important attraction for the promotion of tourism through various big game fishing competitions which are held every year in Mauritius. The catch from this fishery is composed mainly of billfishes and tuna.

Collection of data

The Albion Fisheries Research Centre is responsible for the collection, processing and analysis of data for tuna and pelagic fishes. All tuna statistics are submitted to the Indian Ocean Tuna Commission (IOTC). These data are used in scientific studies on tuna and tuna like species.

Banks Fishery

- Practiced mainly on the Saya de Malha and Nazareth banks and in the St. Brandon area at relatively shallow depth (0-35m).
- Fishing activities are carried out using a “mothership-dory” system whereby fibreglass dories are set at sea with fishermen who fish with hand-lines.
- The fishes are gilled, gutted and blast frozen.
- Catch consists mainly of Dame berri (*Lethrinus mahsena*) and Capitaine (*Lethrinus nebulosus*).

Semi-industrial Chilled Fish Fishery

- Fishing boats operate under the Semi-industrial Chilled Fish Fishery on the Soudan, Albatross, Nazareth and the Saya de Malha banks for the production of chilled fish.
- Handlines are mainly used.
- The main species caught are Dame berri (*Lethrinus mahsena*), Capitaine (*Lethrinus nebulosus*), Caya (*Lethrinus rubrioperculatus*), Vacoas (*Aprion virescens*), Vieille (*Epinephelus morrhua*) and Sacrechien (*Etelis* spp., *Pristipomoides* spp.).
- The catch is put in a mixture of ice and seawater and then kept in the fish hold on ice with a ratio of 2 kg ice for 1 kg of fish. The fish is landed before 12 days.

St. Brandon Fishery

- Fish are caught using hand-line, octopus using harpoons and lobsters are mostly handpicked.
- The fish species caught in this fishery are Dame berri (*Lethrinus mahsena*), Capitaine (*Lethrinus nebulosus*), Cordonnier (*Siganus sutor*), Licorne (*Naso unicornis*), Cateau (*Scarus spp.*) and Vieille (*Plectropomus* and *Variola spp.*).
- The catch is marketed either frozen or chilled and some are salted. Carrier boats are used to land the catch at the port.

Deep water Snapper and Grouper Fishery

Fishing vessels active in this fishery operate on the slopes and the drop-off areas of the Albatross, Nazareth and the Saya de Malha banks and St. Brandon targeting Sacrechien (*Etelis spp.*, *Pristipomoides spp.*), Gueule pavée doré (*Polysteganus baissaci*) and Vielle laboue (*Epinephelus morrhua*). The gear used is the hydraulic reels with 8-10 baited hooks. The catch is chilled as well as frozen.

Management of the Offshore Demersal Fisheries

The offshore demersal fisheries are managed through a licensing system, a catch quota system based on Total Allowable Catch (TAC) and minimum Catch sizes.



Coastal Fishery

- *The coastal fishery is a multiple species fishery and is one of the main sources for the provision of fresh fish to the local market.*
- *The gears used are hook and line, basket trap, large net, gill net and harpoon (for octopus).*
- *Fishing activities are carried out by registered, sports and amateur fishermen in the lagoon and outer lagoon areas.*



Fishing with large net

Documentation Unit

Posters and books on sale:

Poisson Commerciaux du Sud-Ouest de L'Océan Indien (Guide)

Field Guide to Coastal Fishes of Mauritius

Field Guide to Corals of Mauritius

Wholesale - Sale of a minimum of 10 copies at one purchase
(as from 10)

Common corals of Mauritius (Poster)

Wholesale – Sale of a minimum of 25 units at one purchase

Common Reef Fishes of Mauritius (Poster)

Wholesale - Sale of a minimum of 25 units at one purchase)

Bathymetric Charts:

A. Ile Maurice

D. Banc Hawkins

B. Ile Maurice Nord

E. Rodrigues Ouest

C. Banc Soudan

F. Ile Rodrigues

Thematic Maps for coastal areas:

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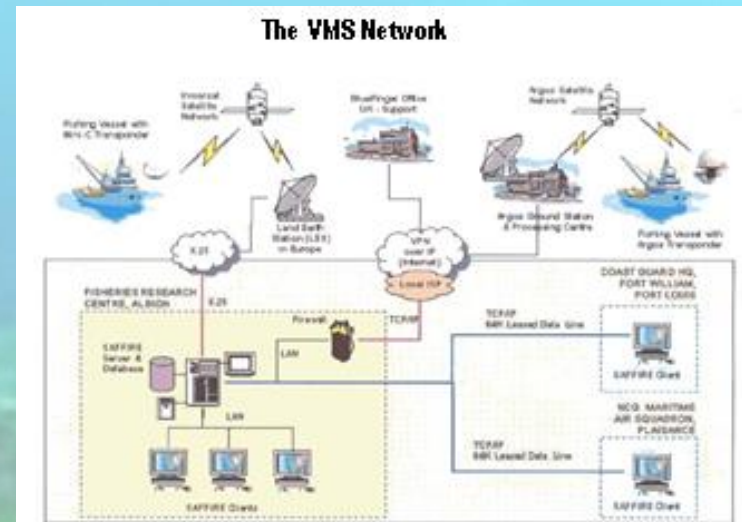
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THE VESSEL MONITORING SYSTEM

The Vessel Monitoring System (VMS) was set up in February 2005 to monitor fishing activities of local and foreign licensed vessels for better protection and management of the fisheries resources in the Maritime zones of Mauritius.

VMS monitors the location, speed and direction of licensed fishing vessels through Inmarsat and Argos satellite-based tracking systems.

VMS consists of the Fisheries Monitoring Centre linked with two National Coast Guard stations (Headquarters, Port Louis and Maritime Air Squadron, Plaisance).



Inmarsat Transponder TT 3026D

Argos Transponder



ONE STOP SHOP OF THE SEAFOOD HUB

The One Stop Shop is dedicated exclusively to the seafood industry to speed up and facilitate administrative and operational clearances in respect of landing, transshipment, import/export, sanitary, health certification, customs and immigration.

Services Provided:

The One Stop Shop offers a complete chain management service to fishing operators, traders, processors, canners and retailers. Different departments are called to work in close collaboration and under the same roof, namely:

- Fisheries Policy, Planning and Management Service
- Custom and Excise Department
- Veterinary Services
- Ministry of Health and Quality of Life
- Passport and Immigration Office

Existing management measures for the coastal fishery resources

The Fisheries and Marine Resources Act makes the necessary provision for the legal framework for the conservation and management of the coastal fishery through:

- collection of fisheries data
- the registration of fishermen
- setting up of marine protected areas (fishing reserves and marine parks)
- prohibition of use of poisonous substances, spears or explosives for fishing
- closed periods for net fishing
- mesh size for nets and basket traps
- prohibition of fishing undersized fish and crabs or lobsters in the berried state
- prohibition of fishing marine turtles and marine mammals
- prohibition of using “l’hameçon perdu”
- prohibition of sale of toxic fish
- licensing of nets and fishing implements

Other management measures:

- Voluntary buy-back scheme for the relinquishing of large nets and gill nets.
- Prohibition of net fishing in marine protected areas.
- Control on the collection of live baits.
- Introduction of a moratorium on the fishing of sea cucumbers

An underwater photograph showing a large school of yellow-striped snappers swimming in a clear blue sea. A diver is visible in the upper right background. The text is overlaid on the image.

THANK YOU

FOR YOUR ATTENTION